

A NEW SPECIES OF HAWAIIAN *GYRINEUM* (CYMATIIDAE)

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ABSTRACT

Gyrineum louisae is described as a new species from Hawaii. The unusual sculpture of the protoconch is described and figured. The protoconchs of *Gyrineum gyrinum* (Linné), *Gyrineum natator* (Röding), *Gyrineum bituberculare* (Lanarck), and *Gyrineum concinnum* (Dunker) are figured for comparison. Various taxonomic characters of the genus are discussed.

INTRODUCTION

In the June 1963 issue of the Hawaiian Shell News, Dr. C. M. Burgess illustrated a species taken during the *Pele* expedition and suggested that it was "similar to a *Bursa*." The figured specimen is actually a new species of *Gyrineum*. Since that time no other specimens have been reported. Recently the figured specimen was brought to me for examination by Dr. Alison Kay of the University of Hawaii during her visit to the Academy of Natural Sciences of Philadelphia. The morphology of the shell and the shape and proportion of the protoconch are typical of the genus (figs. 1-3 and 6). Microscopic examination of the protoconch reveals a remarkable cancellate sculpture which is unique to *Gyrineum louisae*. The regular, fine sculpture on the whorls of *Gyrineum louisae* are clearly distinct from any other species in the genus.

HISTORICAL DISCUSSION OF
THE GENUS *GYRINEUM*

A great deal of confusion has existed concerning the proper use of *Gyrineum* Link, 1807. Many authors, including Wenz (1961, p. 1073), have considered this to be a name properly applied to a bursid genus. This misuse still persists in recent literature, as well as in the systematic arrangement of various museum collections.

Dall (1904, p. 115) discussed Link's genus and pointed out that there is a mixture of species included in the original description which "seems to have been based wholly on the presence of symmetrical lateral varices, and included species

like *M. gyrinus* Linné, which have no posterior canal." He also stated that "Montfort 1810, saw more clearly and put the ranelliform tritons by themselves under the name of *Apollon* . . . with *Murex gyrinus* (Linné) Gmelin as type." Dall confirmed the validity of *Gyrineum* as a cymatiid genus, designating *Murex gyrinus* Linne, 1758, as the type, and listing *Apollon* as a synonym of *Gyrineum*. In spite of the wide-spread circulation of Dall's paper, many authors mistakenly continued to use the name *Gyrineum* for a bursid genus and the name *Apollon* for the cymatiid genus which should properly be called *Gyrineum*.

Cernohorsky (1967, p. 322) agreed with Dall and pointed out that the type for *Apollon* Montfort, 1810, is *A. gyrinus* (= *Murex gyrinus* Linné). Therefore *Apollon* is synonymous with *Gyrineum* Link, 1807. He also stated that Rovereto's designation (1899, p. 106) of *Gyrineum spinosum* (Dillwyn, 1817) as the type species for *Gyrineum* is invalid because *spinosum* was not originally included in Link's genus. *Gyrineum spinosum* (= *G. echinatum* Link, 1807) belongs to the bursid genus *Bufonaria* Schumacher, 1817. Link's list included *G. echinatum* Link, *G. rana* (Linné) Link, *G. bufonium*, *G. natator*, *M. gyrinus* and *G. verrucosum*, a mixture of *Bursa* and *Gyrineum*.

It does seem unfortunate that the rules of taxonomy cause us to recognize *Gyrineum* and to synonymize *Apollon* simply because Link included a species which, in fact, is not typical of the genus he described. This is especially true when we realize the consequential confusion which has existed for almost 167 years concern-

ing the misuse of *Gyrineum* as a bursid genus. As recently as August 1973, Kilius (p. 13) persists in the use of *Apollon* for *Gyrineum*. It is also unfortunate when we realize how much more clearly Montfort understood the relationship of the species he included in *Apollon*.

Species of *Bursa* and *Gyrineum* are easy to confuse because of the similarity of shell morphology, especially since both have more or less laterally aligned varices. However the presence of the open posterior anal canal in the Bursidae and the absence of it in the Cymatiidae as a distinguishing characteristic is widely accepted and applies very well in this instance.

Genus *Gyrineum* Link, 1807

Gyrineum Link, 1807, Beschreibung der Naturalien Sammlung der Universitat zu Rostock, p. 123. Type species, *Murex gyrinus* Linné, 1758, subsequent designation W. H. Dall, 1904.

Apollon Montfort, 1810, Conchyliologie Systématique, et Classification Méthodique des Coquilles: p. 570-571.

Description — Shells range in length from 20 to 45 mm. The genus is typified by laterally aligned varices which on some species actually connect to form a single continuous varix on each side. This gives the whorls a distinct bilaterally compressed appearance. They are sculptured by spiral cords and axial ribs which form fine to coarse beads or nodules where they cross. The aperture is oval to round with dentition usually present on the inner edge of the outer lip. The anterior siphonal canal is short. The radula is tanioglossate and is differentiated from other Cymatiidae by the flat character of the base of the rachidian which contrasts with the arched base typical of the rachidian of most Cymatiidae. The opercula of all species examined are terminal in pattern, with the exception of occasional damaged specimens which have regenerated with a nucleus. This condition has been observed in other genera of the Cymatiidae. The protoconchs of the various species are very similar (figs. 6-10) with the exception of *G. louisae* which has a fine regular cancellate sculpture. Jaws were present in all species examined.

Gyrineum louisae new species, Lewis Figs. 1-3

Description — Shell white, 19 mm. in length and 12 mm. in width at the periphery. There are 6 whorls producing a spire of 57°. The outer lip is thickened at the final varix. The 9 varices do not align but are slightly offset (fig. 3). There are 13 spiral cords crossed by 16 axial ribs between the varices which form a very fine beaded pattern. The axial ribs do not extend to the varices but the spiral cords cross the varices forming 13 distinct fine ridges on the varix at the outer lip. The siphonal canal is very short, measuring only 1½ mm. from the base of the outer lip to the tip of the canal. There is a glossy raised peristome on the inner edge of the outer lip which continues to the upper edge of the glazed parietal wall. The protoconch is covered by a fine network of axial ribs and spiral cords (fig. 6) but is similar in shape to other species in the genus (figs. 7-10). The operculum and animal are unknown.

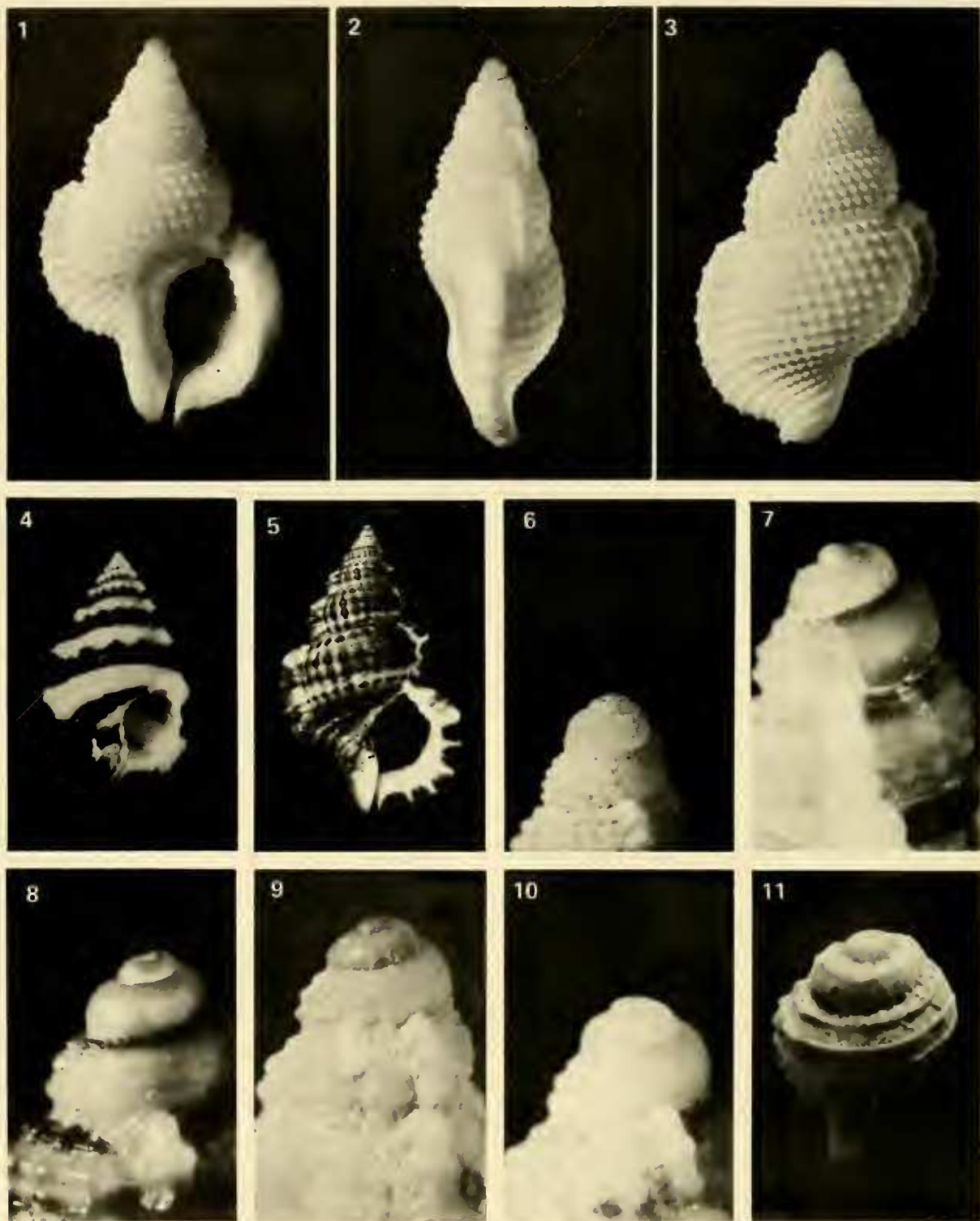
The distribution is unknown except for the type locality where the holotype was taken on the *Pele* expedition at 180 fathoms, off Pokai Bay, Oahu, Hawaii. The holotype is deposited in the B. P. Bishop Museum, Honolulu.

I take great pleasure in naming this species after my wife Louise in small repayment for her continued patience during my work with the Cymatiidae. It is hoped that there will be no confusion with the little used name *Bursa louisae* M. Smith, 1948, which is a synonym for *Bursa caelata* (Broderip 1833) from the Panamic region.

Differentiating features — *Gyrineum louisae* is most similar to *Gyrineum natator* but differs by being smaller, lacking pigmentation by having 13 spiral cords instead of 8. The protoconch of *natator* is smooth.

Gyrineum louisae differs from *Gyrineum gyrinum*, the type of the genus, by being smaller, lacking pigmentation and the color bands of *gyrinum*, having finer sculpture with 13 spiral cords instead of 8. The protoconch of *gyrinum* lacks the sculpture of *louisae*.

Although most species of *Gyrineum* are pigmented, *Gyrineum pusillum* (Broderip, 1832) is also white, and species such as *hirasei* Kuroda



FIGS. 1-11, *Explanation on opposite page.*

and Habe, 1964 and *bituberculare* Lamarck, 1816 can be very pale.

FOSSIL LITERATURE

An investigation was made in order to determine whether or not this species had been named in the fossil literature. Special attention was given to the various species from Java and Timor described and discussed by K. Martin. A partial list of these papers is included in the cited literature. No fossil species was discovered which can be considered to be this species.

ACKNOWLEDGEMENTS

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FIG. 1-3. *Gyrineum louisae* new species, Lewis, Holotype, 180 fathoms off Pokai Bay, Oahu, Hawaii 19mm x 12 mm.

FIG. 4. *Gyrineum gyrinum* (Linné), North side of Kyangel Isl. Palau district, West Carolines 30 mm x 20 mm.

FIG. 5. *Gyrineum natator* (Röding), India 38.5 mm x 24 mm.

FIG. 6. Protoconch of *Gyrineum louisae* Lewis, Holotype, 180 fathoms off Pokai Bay, Oahu, Hawaii x 17.

FIG. 7. Protoconch of *Gyrineum bituberculare* (Lamarck), Tayabas Bay, Philippines, x 17.

FIG. 8. Protoconch of *Gyrineum natator* (Röding), Bay of Bengal, India, x 17.

FIG. 9. Protoconch of *Gyrineum gyrinum* (Linné), West Carolines, x 17.

FIG. 10. Protoconch of *Gyrineum concinnum* (Dunker-, Oblur, Saudi Arabia, x 17.

FIG. 11. Larval shell of *Gyrineum natator* (Röding), Bay of Bengal, India, with periostracal formation showing spiral ridges somewhat similar to the spiral cords formed on the protoconch of *Gyrineum louisae* Lewis. (In the Cymatiidae, the shell sculpture of cords and ribs usually corresponds to periostracal formation.)